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14. ABSTRACT <p>The principal research effort has been towards understanding the high-frequency tail of the surface gravity wave spectrum, lengths of 2 cm to 60 cm; these are principally responsible for wind drag on water. Analysis was based on a unique data set from geophones and hydrophones at 5 1/2 km depth midway between California and Hawaii. The measured spectral intensity around 10 Hz gives a more accurate measure of local winds than the standard satellite scatterometry. A spectral gap at the 30 Hz gravity to capillary transition offers new opportunities for spectral monitoring. We are making progress towards understanding the generation processes.</p> <p>A continuing effort towards the acoustic monitoring of ocean processes has been directed at the polar ocean cavities sandwiched between the floating ice sheet and the sea floor. We are exploring a possible tomography experiment in the Ross Sea with the goal of better predicting polar ice melting processes and the associated global rise in sea level.</p>						
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## Secretary of the Navy Professor of Oceanography

Walter H. Munk  
Scripps Institution of Oceanography, University of California, San Diego  
La Jolla, CA 92093-0225  
phone: (858) 534-2877 email: [wmunk@ucsd.edu](mailto:wmunk@ucsd.edu)

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### PUBLICATIONS

Farrell, W. and W. Munk, (2010). Booms and Busts in the Deep. *Journal of Physical Oceanography*, **40**, 2159-2169.

Munk, W. (2011) The Sound of Climate Change: Crafoord Prize Scientific Lecture, *Tellus*, 1-8.

Worcester, P.F., W.H. Munk, B.D. Cornuelle, M.A. Dzieciuch, and K.E. Wage (2011), Exploring an under-ice ocean cavity with sound, paper presented at XXV IUGG General Assembly, Melbourne, Australia, 28 June – 7 July 2011.

Munk, W. (2011) Nansen Center 1986-2011: A View from La Jolla. *Presentations from the Nansen Center's 25 Years Colloquium*, <http://www.nersc.no/news/presentations-nansen-center%C2%B4s-25-years-colloquium-available>.

- Worcester, P. F., and W. H. Munk (2012), Oceanography in 2030: The role of acoustics in observing the ocean, 2012 Ocean Sciences Meeting, Salt Lake City, Utah, 20–24 February 2012. (POSTER)
- Worcester, P. F., W. H. Munk, B. D. Cornuelle, M. A. Dzieciuch, and K. E. Wage (2012), Exploring an under-ice ocean cavity with sound, 2012 Ocean Sciences Meeting, Salt Lake City, Utah, 20–24 February 2012. (ORAL)
- Munk, W. and C. Pendarvis (2012) Where the Swell Begins. Groundswell Publication Annual Publication, 5, 242-257, in press.
- Dashen, R. and W. Munk (2013) A Model of Ocean Noise, JASA Special Issue, in press.
- Farrell, W. and W. Munk (2013) Surface gravity waves and their acoustic signatures, 1-30 Hz, on the mid-Pacific sea floor, JASA Special Issue, 134(4).
- Young, W.R., C.L. Wolfe, and W.H. Munk (2013) Generation of gravity-capillary waves by instability of shear flow, J. Fluid Mech., submitted.
- Munk, W. (2013) The perfect storm. Proceedings of the American Philosophical Society, in press.

#### **Meetings and Invited Talks**

Courant Institute of Mathematical Science, Center for Atmosphere Ocean Science Colloquium, **Invited Lecture:** *Exploring an under-ice ocean cavity with sound*, New York University, 04 November 2010

Attended: MEDEA Ocean Panel; Herndon, VA; 17-20 January 2011

Attended: American Philosophical Society Annual Meeting 28-30 April 2011

Invited Talk: *Scripps Then, Now, and in the Future*; Scripps Institution of Oceanography, La Jolla, CA; 12 May 2011

Attended: International Symposium on Interactions of Glaciers and Ice Sheets with the Ocean SIO, Scripps Institution of Oceanography, La Jolla, CA; 5-10 June 2011

Attended: Algae + Fish = Ocean Mixing? Conference, La Jolla, CA; 5-6 July 2011

Attended: JASON Summer Session; July 2011

Attended: Meeting of the Navy Chairs, ONR, Washington, D.C.; 18 August 2011

Attended: The Venice Conference: Improving the Capacity to Assess and to Adapt to Climate Change in Urban Coastal Regions, Venice Italy, 12-15 September 2011

Invited Talk: *Waves, long and short*, Fourteenth NPAL (North Pacific Acoustic Laboratory) Workshop; Fallbrook, CA; 20 October 2011

Keynote Address: *Waves, long and short*, Symposium to honour the scientific work of Klaus Hasselmann at the Max Planck Institute for Meteorology; Hamburg, Germany; 09 November 2011

Keynote Address: *Nansen Center 1986-2011: A View from La Jolla*, Nansen Center 25 Year Colloquium, In Honour of Fridtjof Nansens 150 Year Anniversary; Bergen, Norway; 18 November 2011

Invited Talk: *Waves, long and short*, National Oceanography Centre Lecture Series; NOC Southampton; 24 November 2011

Invited Talk: 2012 Distinguished Speakers Series, Riford Center; La Jolla, CA; 26 January 2012

Invited Talk: *Science and Technology on the Homefront*, 2012 Lecture Series, La Jolla Historical Society; La Jolla, CA; 07 April 2012

Attended: The American Philosophical Society Annual Meeting; Philadelphia, PA; 19-21 April 2012

Attended: JASON Spring Meeting; Arlington, VA; 27-29 April 2012

Attended: The National Academy of Sciences Annual Meeting; Washington, DC; 29 April – 01 May 2012

Invited Talk: *Wind drag and ultra-gravity waves*, IUGG Conference on Mathematical Geophysics; University of Edinburgh, 18-22 June 2012

Attended: Laying of the Keel of the Ocean Class Oceanographic Vessels AGOR 27 & AGOR 28; Anacortes, WA; 17 August 2012

Birch Aquarium at Scripps, University of California, San Diego (La Jolla, CA)  
Distinguished Speakers Series: “*Where the Swell Begins*” (October 8, 2012)

Southern Ocean Observing System Workshop - Seeing Below the Ice (Hobart, Tasmania)  
“*Where the Swell Begins*” (October 22-25, 2012)

CSIRO Student Symposium (Hobart, Tasmania)  
“*Where the Swell Begins*” (October 26, 2012)

Symposium and Reception at Tokyo University  
*"A Discussion with Walter Munk"* (November 7, 2012)

Kyoto Prize Presentation at the Atheneum (La Jolla, CA) "Reflections of a Past Laureate  
on the 2012 Kyoto Prize Ceremony" (November 28, 2012)

Penn State University (State College, PA)  
*"Where the Swell Begins"* (February 5, 2013)

Groundswell Society Annual Meeting (La Jolla, CA)  
*"Where the Swell Begins"* (February 16, 2013)

Keck Theory Seminar at Scripps Institution of Oceanography, UCSD (La Jolla, CA)  
*"Where the Swell Begins"* (March 30, 2013)

The American Philosophical Society Annual Meeting (Philadelphia, PA)  
The Penrose Memorial Lecture: *"The Perfect Storm"* (April 24-26, 2013)